AMENDMENTS TO THE CLAIMS:

Claims 1-14 (Canceled)

15. (Currently amended) A semiconductor structure, comprising:

a substrate;

a crystalline oxide layer comprising single-crystal oxide formed over said substrate; and

a smooth ~~an~~ epitaxial silicon layer comprising single-crystal silicon formed on said crystalline oxide layer.

16. (Original) The structure of claim 15, further comprising:

a silicon oxide layer formed between said substrate and said crystalline oxide layer.

17. (Original) The structure of claim 15, wherein the crystalline oxide layer comprises an oxide of at least one of the rare earth elements.

18. (Original) The structure of claim 15, wherein the crystalline oxide layer comprises an oxide of yttrium.

19. (Original) The structure of claim 15, wherein the crystalline oxide layer comprises a mixture of oxides of different rare earth elements and yttrium.

20. (Previously presented) The structure of claim 15, further comprising:

at least one additional layer of crystalline oxide formed on said epitaxial silicon layer; and

at least one additional layer of silicon formed on said additional layer of crystalline oxide.

21. (Currently amended) A semiconductor structure, comprising:

a substrate;

a crystalline oxide layer comprising single-crystal oxide formed over said substrate; and

a smooth an epitaxial germanium layer comprising single-crystal germanium formed on said crystalline oxide layer.

22. (Original) The structure of claim 21, further comprising:

a silicon oxide layer formed between said substrate and said crystalline oxide layer.

23. (Original) The structure of claim 21, wherein the crystalline oxide layer comprises an oxide of at least one of the rare earth elements.

24. (Original) The structure of claim 21, wherein the crystalline oxide layer comprises an oxide of yttrium.

25. (Original) The structure of claim 21, wherein the crystalline oxide layer comprises a mixture of oxides of different rare earth elements and yttrium.

26. (Previously presented) The structure of claim 21, further comprising:

at least one additional layer of crystalline oxide formed on said epitaxial germanium layer; and

at least one additional layer of germanium formed on said additional layer of crystalline oxide.

27. (Currently amended) A semiconductor structure, including:

a crystalline oxide surface comprising a single-crystal oxide surface; and

an amorphous layer of at least one of silicon, germanium, gallium arsenide, aluminum arsenide, indium phosphide, aluminum antimonide, indium arsenide, gallium phosphide and mixed alloys thereof, deposited on said crystalline oxide surface by evaporation or chemical vapor deposition,

wherein said amorphous layer is deposited in the presence of a surfactant vapor, such that

said amorphous layer forms a smooth epitaxial silicon layer when annealed.

Claims 28-55 (Canceled)

56. (Previously presented) The structure of claim 15, wherein said substrate comprises a silicon substrate.

57. (Previously presented) The structure of claim 15, wherein said substrate comprises a germanium substrate.

58. (Previously presented) The structure of claim 21, wherein said substrate comprises a silicon substrate.

59. (Previously presented) The structure of claim 21, wherein said substrate comprises a germanium substrate.

60. (Previously presented) The structure of claim 15, wherein said crystalline oxide layer is formed directly on said substrate.

61. (Previously presented) The structure of claim 21, wherein said crystalline oxide layer is formed directly on said substrate.

62. (Previously presented) The structure of claim 27, further comprising a silicon substrate, wherein said crystalline oxide surface is formed directly on said silicon substrate.

63. (Currently amended) The structure of claim 15, wherein said epitaxial silicon layer comprises a completely ~~single-crystal~~ epitaxial silicon layer.

64. (Currently amended) The structure of claim 21, wherein said epitaxial germanium layer comprises a completely ~~single-crystal~~ epitaxial germanium layer.

65. (Previously presented) The structure of claim 15, wherein said crystalline oxide layer comprises an epitaxial oxide layer.

66. (Previously presented) The structure of claim 21, wherein said crystalline oxide layer comprises an epitaxial oxide layer.

67. (Previously presented) The structure of claim 27, wherein said crystalline oxide surface comprises an epitaxial oxide surface.

68. (Previously presented) The structure of claim 15, wherein said crystalline oxide layer comprises a mixture of oxides of different rare earth elements.

69. (Previously presented) The structure of claim 21, wherein said crystalline oxide layer comprises a mixture of oxides of different rare earth elements.

70. (Previously presented) The structure of claim 27, wherein said crystalline oxide surface comprises a surface of a mixture of oxides of different rare earth elements.

71. (Previously presented) The structure of claim 15, wherein said oxide layer crystallizes to have a bixbyite structure.

72. (Previously presented) The structure of claim 21, wherein said oxide layer crystallizes to have a bixbyite structure.

73. (Previously presented) The structure of claim 27, wherein said crystalline oxide surface

crystallizes to have a bixbyite structure.

74. (Previously presented) The structure of claim 15, wherein said crystalline oxide layer is perfectly lattice-matched to silicon.

75. (Previously presented) The structure of claim 27, wherein said crystalline oxide surface is perfectly lattice-matched to silicon.

76. (New) The structure of claim 15, wherein said epitaxial silicon layer comprises a thickness in a range from 0.5nm to 1μm.

77. (New) The structure of claim 15, wherein said epitaxial silicon layer is formed entirely of single-crystal silicon.

78. (New) The structure of claim 15, wherein said crystalline oxide layer comprises $(La,Y)_2O_3$.